

1   **WHAT IS CLAIMED IS :**

2           1. A handy dental flosser comprising:

3           a housing (10) with a body and an extending tube (17) protruding  
4   from the body;

5           a winding wheel (11) rotatably attached inside the body of the  
6   housing (10), wherein the winding wheel (11) comprises a toothed plate (12)  
7   and a driving plate (13) and a middle rod connecting between the toothed  
8   plate (12) and the driving plate (13);

9           a string of dental floss (14) wound on the middle rod of the winding  
10   wheel (11) and tied to a distal end of the extending tube (17); and

11          a locking device mounted on the housing (10) to detachably engage  
12   with the winding wheel (11).

13          2. The handy dental flosser as claimed in claim 1, wherein the  
14   housing (10) further has a first limiting flange (23) formed on an inner  
15   periphery of the housing (10) between the body and the extending tube (17),  
16   and a second limiting flange (25) formed on the inner periphery near the  
17   distal end of the extending tube (17); and

18          the locking device comprises a trigger block (20) movably attached  
19   on the housing (10), a locking sheet (22) mounted under the trigger block (20)  
20   to detachably engage with the toothed plate (12) of the winding wheel (11), a  
21   shaft (242) attached in front of the trigger block (20) and being limited by the  
22   first limiting flange (23), and a floss-tying block (30) connected to the shaft  
23   (242) to operationally block the extending tube (17) and being limited by the  
24   second limiting flange (25).

1           3. The handy dental flosser as claimed in claim 2, wherein the shaft  
2 (242) has a spring (243) surrounding around the shaft to provide an elastic  
3 force to drive the trigger block (20) back.

4           4. The handy dental flosser as claimed in claim 3, wherein the  
5 housing (10) further has a bent portion (18) formed at the distal end of the  
6 extending tube (17); and

7           the locking device further has a resilient sheet (24) passing through  
8 the extending tube (17) and the bent portion (18) mounted between the shaft  
9 (242) and the floss-tying block (30).

10          5. The handy dental flosser as claimed in claim 2, wherein the  
11 locking sheet (22) is V-shaped and has an immovable end attached under the  
12 trigger block (20) and a locking end detachably engaged with the toothed  
13 plate (12) of the winding wheel (11).

14          6. The handy dental flosser as claimed in claim 3, wherein the  
15 locking sheet (22) is V-shaped and has an immovable end attached under the  
16 trigger block (20) and a locking end detachably engaged with the toothed  
17 plate (12) of the winding wheel (11).

18          7. The handy dental flosser as claimed in claim 4, wherein the  
19 locking sheet (22) is V-shaped and has an immovable end attached under the  
20 trigger block (20) and a locking end detachably engaged with the toothed  
21 plate (12) of the winding wheel (11).

22          8. The handy dental flosser as claimed in claim 2, wherein the floss-  
23 tying block (30) has an I-shaped cross section and has an upper plate (31), a  
24 lower plate (33) and a connecting rod (32) extending between the upper plate

1 (31) and the lower plate (33);

2 wherein the upper plate (31) is accommodated inside the extending  
3 tube (17) and limited by the second limiting flange (25);

4 wherein the lower plate (33) has a diameter larger than an inner  
5 diameter of the extending tube (17) to block the extending tube (17).

6 9. The handy dental flosser as claimed in claim 3, wherein the floss-  
7 tying block (30) has an I-shaped cross section and has an upper plate (31), a  
8 lower plate (33) and a connecting rod (32) extending between the upper plate  
9 (31) and the lower plate (33);

10 wherein the upper plate (31) is accommodated inside the extending  
11 tube (17) and limited by the second limiting flange (25);

12 wherein the lower plate (33) has a diameter larger than an inner  
13 diameter of the extending tube (17) to block the extending tube (17).

14 10. The handy dental flosser as claimed in claim 4, wherein the floss-  
15 tying block (30) has an I-shaped cross section and has an upper plate (31), a  
16 lower plate (33) and a connecting rod (32) extending between the upper plate  
17 (31) and the lower plate (33);

18 wherein the upper plate (31) is accommodated inside the bent portion  
19 (18) of the extending tube (17) and limited by the second limiting flange (25);

20 wherein the lower plate (33) has a diameter larger than an inner  
21 diameter of the extending tube (17) to block the bent portion (18) of the  
22 extending tube (17).

23 11. The handy dental flosser as claimed in claim 7, wherein the floss-  
24 tying block (30) has an I-shaped cross section and has an upper plate (31), a

1 lower plate (33) and a connecting rod (32) extending between the upper plate  
2 (31) and the lower plate (33);

3 wherein the upper plate (31) is accommodated inside the bent portion  
4 (18) of the extending tube (17) and limited by the second limiting flange (25);

5 wherein the lower plate (33) has a diameter larger than an inner  
6 diameter of the extending tube (17) to block the bent portion (18) of the  
7 extending tube (17).

8 12. The handy dental flosser as claimed in claim 11, wherein the  
9 housing (10) further has an opening (105) defined in the housing (10) and a  
10 side-cover (107) with a hole detachably covering the opening (105); and

11 the winding wheel (11) further has a knob (131) formed on an outer  
12 face of the driving plate (13) to emerge out of the housing (10) via the hole  
13 of the side-cover (107);

14 whereby, the winding wheel (11) is enabled to be rotated by driving  
15 the knob (131).

16 13. The handy dental flosser as claimed in claim 12, wherein the  
17 housing (10) is composed of two symmetrical shells (10a, 10b), each shell  
18 has a body and an extending arm protruding from the body;

19 multiple positioning posts (103) are formed on an inner periphery at  
20 the body of one shell; and

21 multiple sleeves (104) are formed on an inner periphery at the body  
22 of the other shell to correspondingly engage with the multiple positioning  
23 posts (103).

24 14. The handy dental flosser as claimed in claim 13, wherein the

1 housing (10) further has a recess (16) defined in an outer periphery of the  
2 housing (10).

3 15. The handy dental flosser as claimed in claim 1, wherein a sharp  
4 edge (26) is formed at a front edge of the distal end of the extending tube (17)  
5 and an obtuse edge (27) is formed at a rear edge of the distal end of the  
6 extending tube (17).

7 16. The handy dental flosser as claimed in claim 3, wherein a sharp  
8 edge (26) is formed at a front edge of the distal end of the extending tube (17)  
9 and an obtuse edge (27) is formed at a rear edge of the distal end of the  
10 extending tube (17).

11 17. The handy dental flosser as claimed in claim 4, wherein a sharp  
12 edge (26) is formed at a front edge of the distal end of the extending tube (17)  
13 and an obtuse edge (27) is formed at a rear edge of the distal end of the  
14 extending tube (17).

15 18. The handy dental flosser as claimed in claim 7, wherein a sharp  
16 edge (26) is formed at a front edge of the distal end of the extending tube (17)  
17 and an obtuse edge (27) is formed at a rear edge of the distal end of the  
18 extending tube (17).

19 19. The handy dental flosser as claimed in claim 11, wherein a sharp  
20 edge (26) is formed at a front edge of the distal end of the extending tube (17)  
21 and an obtuse edge (27) is formed at a rear edge of the distal end of the  
22 extending tube (17).

23 20. The handy dental flosser as claimed in claim 14, wherein a sharp  
24 edge (26) is formed at a front edge of the distal end of the extending tube (17)

- 1 and an obtuse edge (27) is formed at a rear edge of the distal end of the
- 2 extending tube (17).